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Design and Electrochemical Study of Nanomaterials for Green Chemistry and Sensing Applications

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Abstract

With rapidly mounting environmental concerns, coupled with the accelerated depletion of fossil fuels, there is a significant demand for the development of advanced technologies for the sustainable energy production and environmental remediation. Nanostructured materials with high surface areas have garnered significant interests due to their unique properties and impressive applications spanning electrocatalysis, photocatalysis, energy conversion and storage, sensing, and wastewater treatment. Recently, my research team has designed and investigated a variety of functional nanomaterials [1-6]. In this talk, the synthesis and surface characterization of advanced palladium, gold, copper, and graphene-based nanomaterials are presented. The electrochemical properties of these nanomaterials as well as their promising applications in CO_2 reduction, electrochemical sensing and the envisioned hydrogen economy are highlighted. The critical roles of nanostructured surfaces in the development of advanced electrochemical technologies for energy, environmental and medical applications are discussed.

References

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